CURRENT® Smart Grid Overview

July 2007

About CURRENT

- The leader in Smart Grid and differentiated BPL services
- Integrated communications, sensors and management and analytic software solution
- Largest global Smart Grid services and broadband deployment in progress with TXU (1.8M homes, 200K businesses, 450K elements)
- 350 Employees worldwide
- Winner of Red Herring's Top 100 Private Companies for 2006
- Winner of 2006 Platts Global Energy Commercial Technology of the Year award of the Year Award
- Investors include:

TXU Deployment – Dallas, Texas

CURRENT awarded the largest BPL / Smart Grid deployment and services agreement ever by TXU - $150M over 10 years for the following services:

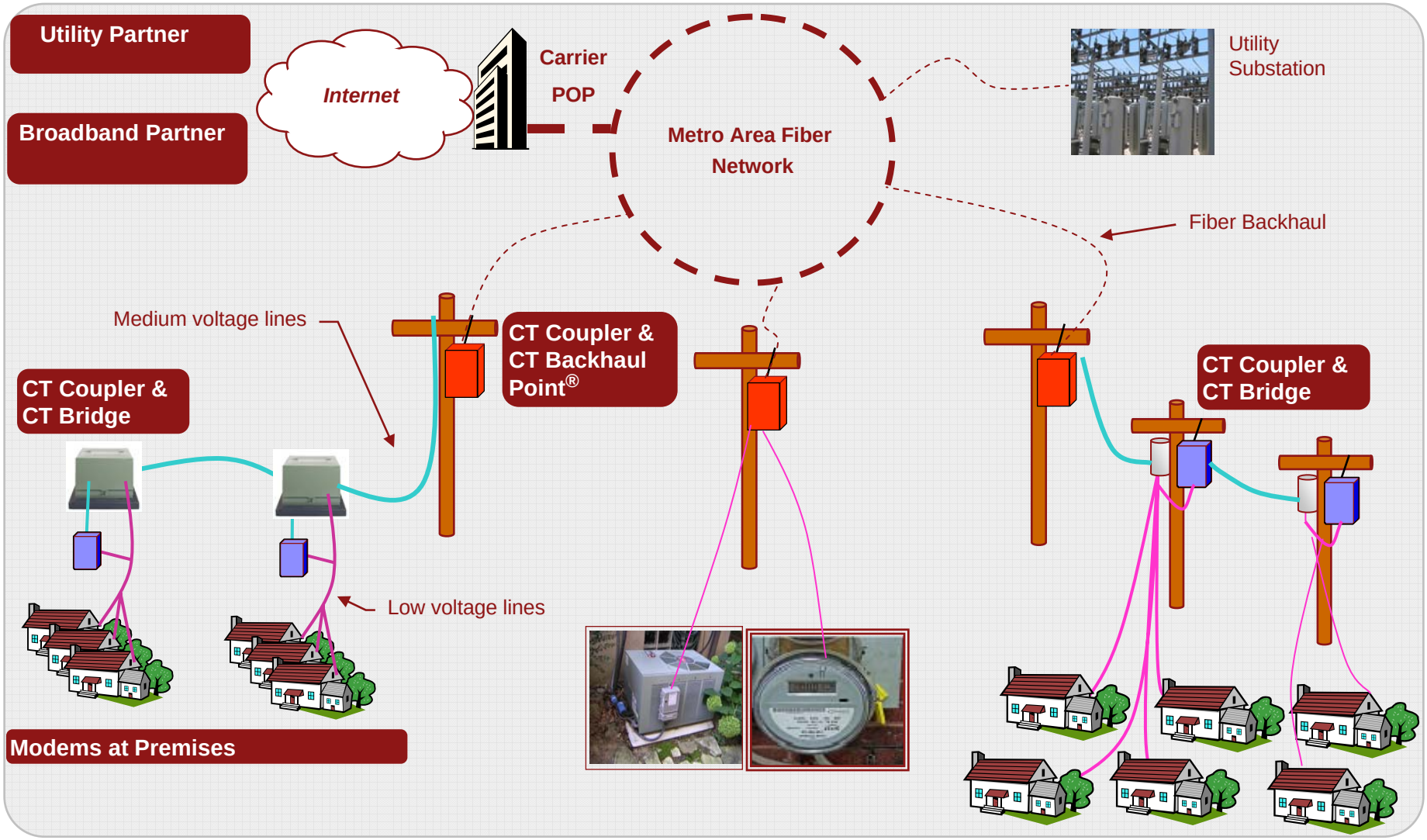
- Automated Meter Reading – over 1.8 million meters in Dallas/Fort Worth
- Transformer Deterioration & Overload Detection – 400,000+ transformers
- Outage Detection and Restoration
- Substation Connectivity
- Exclusive right to operate network to sell retail communications services

Success to Date – Duke Energy

- Nation's 2nd largest BPL deployment with 50,000+ homes passed in Cincinnati
- Today's offering: Tiered data access (up to 3Mbps symmetric) + VoIP
- Approximately 50% of subscribers switched from DSL or cable
- 95% customer satisfaction
- Competing head-to-head with Time Warner and Cincinnati Bell

Network Architecture (In Network - US)

Hybrid BPL-Fiber-Wireless Network



Smart Grid Solutions

Smart Metering

- Electric AMR Module
- Electric Gas & Water AMR Module
- Data Collection and Aggregation

Distribution Management

- Outage Detection & Restoration
- Voltage Monitoring
- Equipment Deterioration
- Transformer Overload

Customer Energy Management

- Demand Response
- Thermostat Control
- Smart Home

Substation Management

- Substation Connectivity
- Substation Analysis

Energy Demand Will Exceed Supply

Need for multiple solutions

- U.S. Electric demand forecast to increase by 19%, but supply will increase by only 6% over the next 10 years
- California peak demand this summer was at a level not expected until 2011
- Electricity use grew from 10% of primary energy consumption in 1940 to nearly 40% today.
- 10 to 20% of energy is lost before it reaches the end user
- Electric Power Generation produced:
  - 40% of total U.S. energy related CO_2 emissions (32% of 40% is from use of coal)
  - 60% of the total growth in energy related CO_2 emissions from 1990 to 2005
- In U.S., Coal is expected to increase from 50% to 57% of total electric production
  - Last nuclear plant came on line in 1996
  - Nuclear power is expected to fall from 19% in 2005 to 15% in 2030 as a % of total electricity
  - Renewables are expected to remain flat at approximately 10%

Alternatives are to build more plants, impact economy through outages (total cost of outages estimated at $120 billion per year) or use Smart Grid to increase efficiency and facilitate load control

Sources: U.S. government reports, California ISO, EPRI

Smart Grid Improvement Capabilities

Studies have found that adopting economical but untapped energy efficiency could cut in half the additional electricity needed over the next two decades (September 12, 2006 Associated Press Newswires)

Smart Grid can Improve Energy Efficiency

- CURRENT Smart Grid services can help utilities significantly reduce electricity losses by:
  - Identifying the nature & location of the losses
  - Reducing inefficiencies in the distribution system with services such as automated capacitor bank control, load balancing and phase imbalance correction
  - Identifying immediately and preventing theft

Smart Grid can Manage Demand and Inform the Consumer

- Demand-side management programs increasingly are becoming an effective alternative to electric utilities running economically and environmentally inefficient generators to meet surges in demand
- CURRENT Smart Grid services grant utilities and consumers the two-way communication necessary:
  - For utilities to verify the effectiveness of demand-side management programs
  - For consumers to track the benefits of their participation in the program

Smart Grid can Enable Alternative Energy Sources

- CURRENT Smart Grid services and network provide the necessary communication and monitoring to manage and optimize a generation portfolio of highly dispersed renewable sources

Clean Energy Opportunity

Smart Grid technology will also have a meaningful impact on reducing CO_2 emissions, but challenges remain:

The distribution of electricity is still largely a rate base-regulated industry. Rate base regulation can make it difficult for regulated companies to strive for increased efficiencies if the savings have to be shared between the rate payer and the owners through a contentious setting of rates with regulators.

Utility Incentives are becoming aligned to implement Smart Grid

- Utilities should have incentives to reduce, not increase demand
- Utilities should have incentives to reduce line losses and make other grid efficiency improvements
- Utility's return on Smart Grid programs should be competitive with the returns on capital for power plants that increase potential revenue
- Regulators need to provide certainty to Utilities about how they will respond to Smart Grid programs

Public Support of Alternative, Renewable fuels or Smart Grid conservation measures should be balanced

- Smart Grid should be viewed as a renewable resource
- Distribution Grid can make significant contribution to improving grid efficiency and should be equal to emphasis placed on transmission

CURRENT® BPL installation

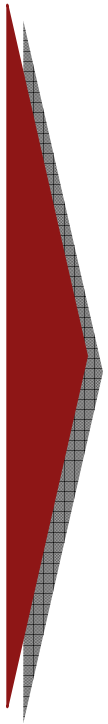
- Aerial
- Underground

Smart Grid Services = Market Opportunity

Utilities require comprehensive intelligence and control over power distribution

21st Century Electric Needs

- Grid changed little in 50+ years
- Limited "network intelligence" for monitoring and control
  - Lacks real-time outage data
  - 60% equipment to be replaced in 10 years
  - 40% increase in electric demand by 2020
- Security of grid needs to be enhanced
- At least 50% of utilities' tech workforce expected to retire in 5-10 years
- Consumer needs real-time usage and prices
- Climate change and environmental constraints



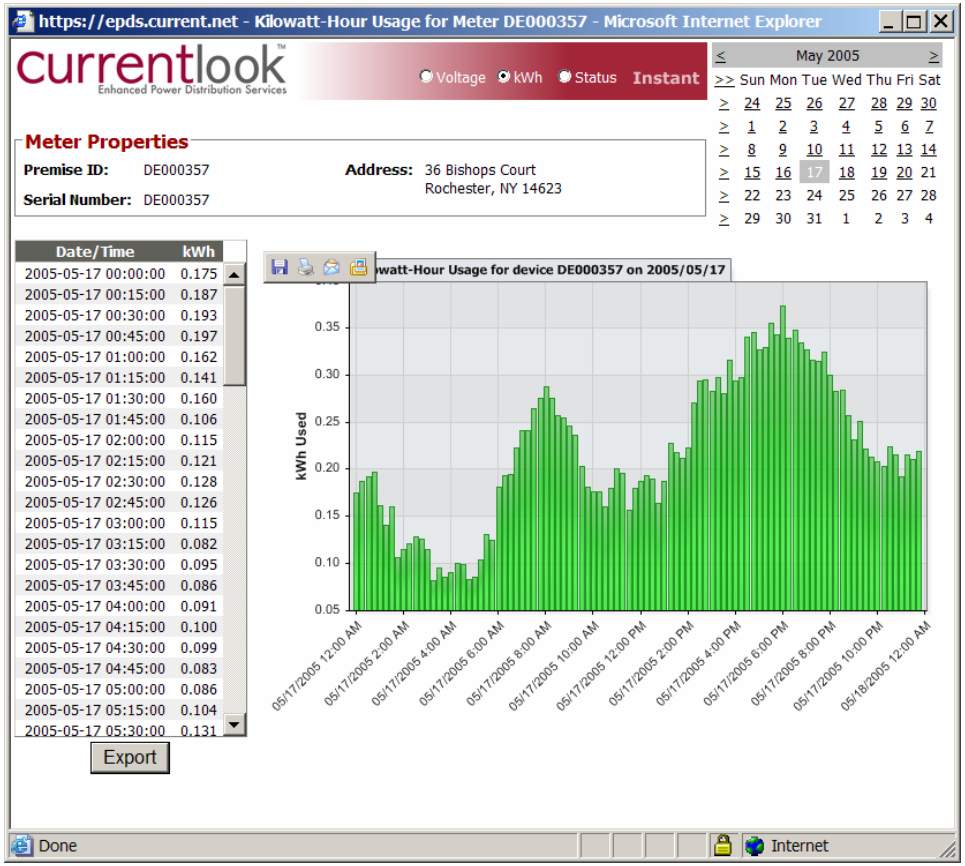
Smart Grid Services

- Increase grid efficiency
  - Estimated 5 - 10% usage reduction
  - Eliminate $125bn anticipated capital improvements ($80bn new power generation)
- Enhance reliability and security
  - Alleviates burden of aging infrastructure
  - $50bn saved from outage reductions by 2020
- Empower customers with real-time pricing to control usage at peak times of power consumption
- Address aging workforce through distribution network automation
- Improve environmental performance of electric utilities
  - Reduces need for new plants
  - Reduces CO_2 emissions up to 25%

Source: Dept of Energy, Electric Power Research Institute

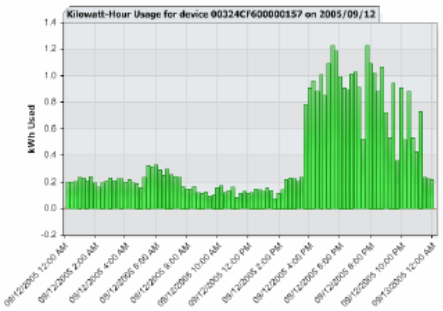
Smart Metering
Electric AMR

- Monitored by network management system, CURRENT Look™
- “Under the Glass” BPL communications technology
- Comprehensive functionality
  - **1 minute increment reads**
  - On-demand reads
  - Remote software upgrade capability
  - Proactive alarming for “Unusual” events
- Demand-response tools
  - Real-time or peak pricing
  - Time-of-use pricing
- Greatly reduced service costs
  - Real-time meter data information can avoid truck rolls
  - Real-time power outage and restoration detection

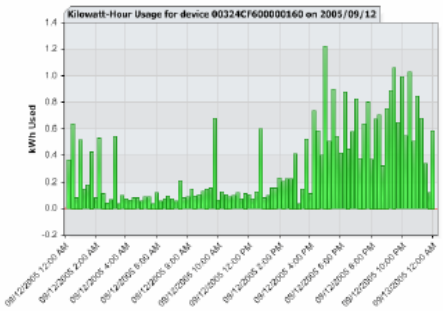


Customer Energy Management
Direct Load Control

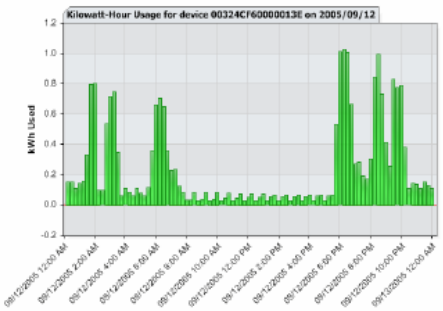
Event Data	9-12-2005 Event								
	Group C	Group A				Group B			
Site #	1	2	3	4	5	6	7	8	9
Site Name	Demo House	Marburg	Grand Vista	Elywnne	Palisades	Meriweather	Oak Crest	Paxton	Sherel
Algorithim Used	7.5/15 RDLC	7.5/15 RDLC	7.5/15 RDLC	7.5/15 RDLC	7.5/15 RDLC	7.5/15 RDLC	7.5/15 RDLC	7.5/15 RDLC	7.5/15 RDLC
Event Start Time	1:30	2:00	2:00	2:00	2:00	1:00	1:00	1:00	1:00
Event Stop Time	4:30 AM	5:00 AM	5:00 AM	5:00 AM	5:00 AM	4:00 AM	4:00 AM	4:00 AM	4:00 AM
Counter Before Event	21	22	48		23	16	38	17	15
Counter After Event	33	34	60		35	28	50	29	27
# of Cycles	*12*	*12*	*12*		*12*	*12*	*12*	*12*	*12*



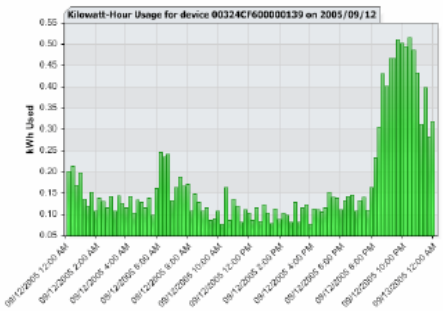
Haller – Palisades – 2pm – 5pm



Quinley – Sherel 1pm – 4pm



Freuhaff – Marburg – 2pm – 5pm



Barth – Grand Vista – 2pm – 5pm

Demand Response

- BPL-enabled direct load control
  - Multiple vendors
- Two-way communications
- Real-time verification of load reduction through AMR
- Synchronization of DLC devices with distribution network management system to allow for surgical DLC application to optimize distribution network operation

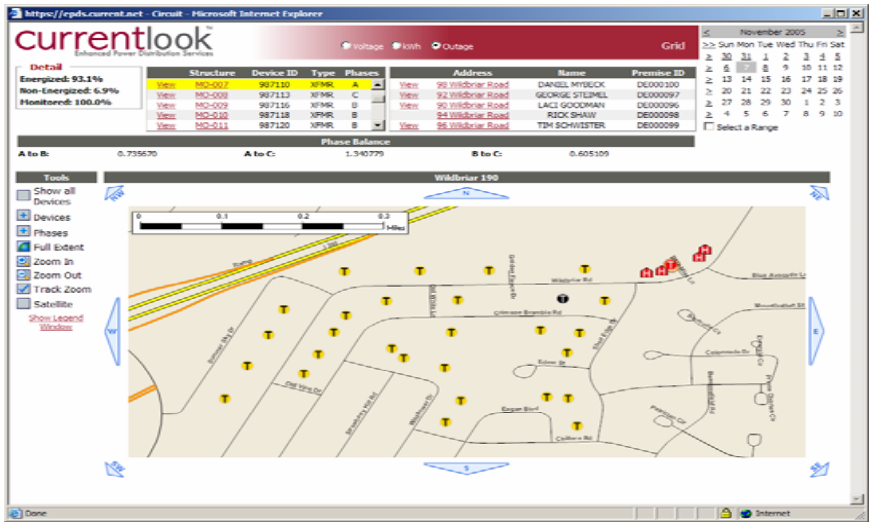
Distribution Management
Outage Detection and Restoration

Present Utility Practice

- Utilities learn of power outages when customers call
- The Outage Management System (OMS) analyzes customer calls to determine location of outage and restoration
- Utilities have to call or visit customers to verify that power has been restored

CURRENT Utility Practice

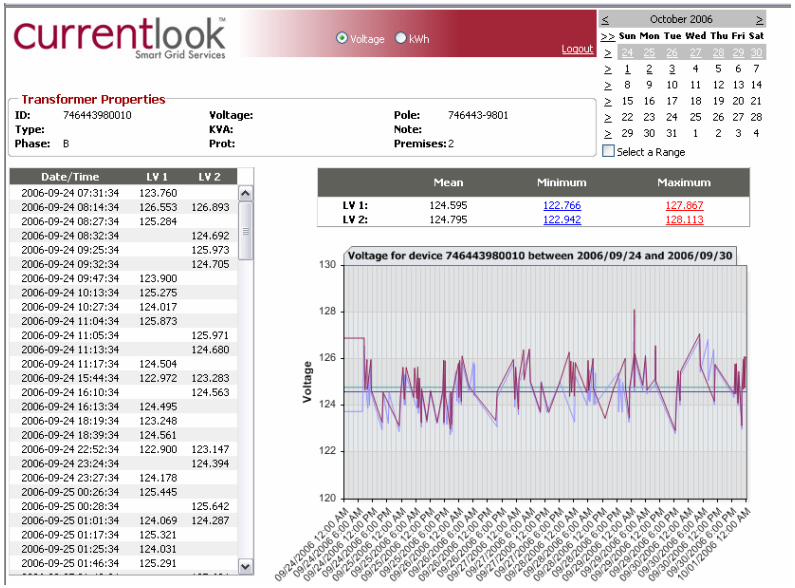
- *CURRENT Collector* notifies the utility's OMS of power loss at a transformer similar to a customer call
- *CURRENT Collector* notifies the utility's OMS of power restoration at a transformer and meter similar to a utility call
- The OMS analyzes *CURRENT* notifications to determine location of outage and restoration

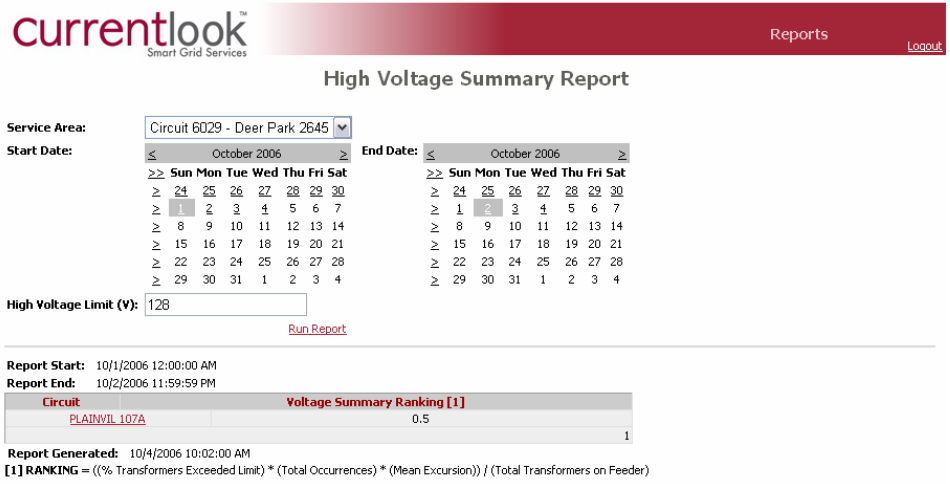


Distribution Management

Voltage and Current Monitoring

- Analyze power flows across feeders to improve efficiency
- Compare to meter data to detect theft
- Allow for user-defined data collection and analysis
- Proactive alarming and reporting
  - High Voltage Report
  - Low Voltage Report
  - Voltage Imbalance
  - Voltage Planning Report





Distribution Management
Transformer Overload

- Timely, accurate data specific to the transformer
- Determine the sources of the overload
- Proactive transformer replacement
- Proactive alarming and reporting
  - Acute Transformer Overload Notification
  - Duration Transformer Overload Notification
  - Transformer Equivalent Load
- Automated Transformer Size Recommendation to improve efficiency

currentlook™ Smart Grid Services — Reports — Logout

Acute Transformer Overload Report

Service Area: Circuit 6029 - Deer Park 2645

Start Date: < October 2006 >

>>	Sun	Mon	Tue	Wed	Thu	Fri	Sat
>	24	25	26	27	28	29	30
>	1	2	3	4	5	6	7
>	8	9	10	11	12	13	14
>	15	16	17	18	19	20	21
>	22	23	24	25	26	27	28
>	29	30	31	1	2	3	4

End Date: < October 2006 >

>>	Sun	Mon	Tue	Wed	Thu	Fri	Sat
>	24	25	26	27	28	29	30
>	1	2	3	4	5	6	7
>	8	9	10	11	12	13	14
>	15	16	17	18	19	20	21
>	22	23	24	25	26	27	28
>	29	30	31	1	2	3	4

Transformer Overload (% of Rating): 200

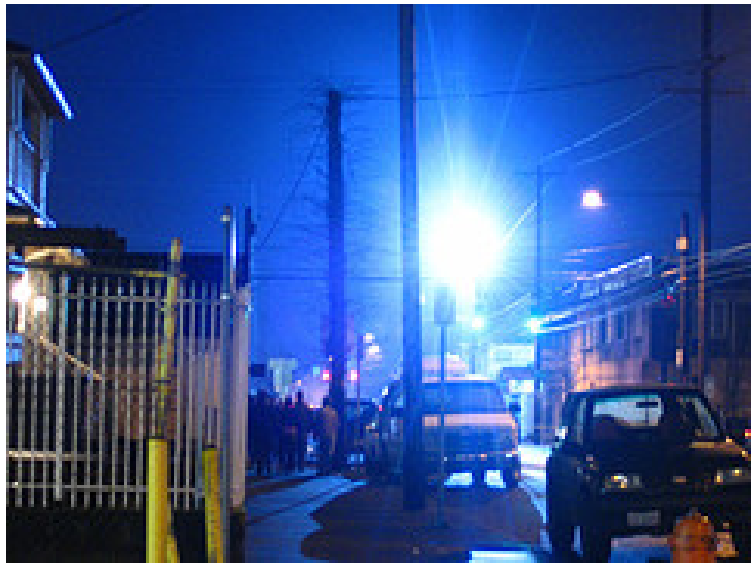
Run Report

Report Start: 10/1/2006 12:00:00 AM
Report End: 10/2/2006 11:59:59 PM

Transformer	Nameplate Rating (kVA)	Maximum Usage (kW)	% Overload
106903688	50	399.388	798.776
106903704	50	399.052	798.104
103695784	50	399.004	798.008
103695238	50	393.788	787.576

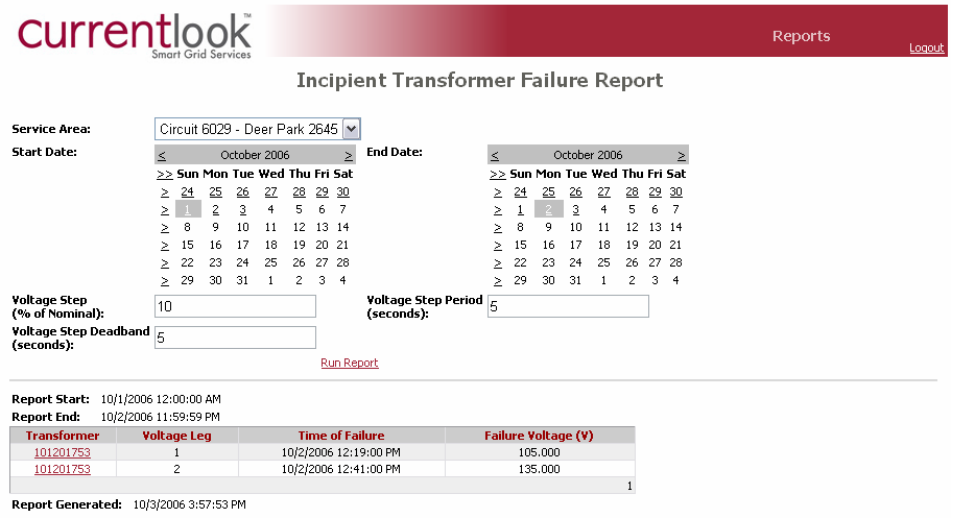
1

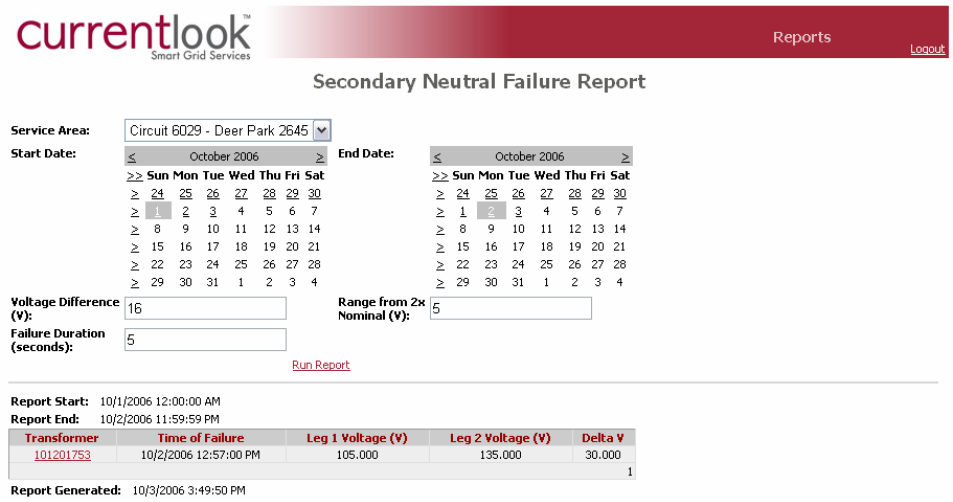
Report Generated: 10/3/2006 4:42:56 PM



Distribution Management
Equipment Deterioration

- Transformer – Detect transformers with shorted high side windings before faulting
- Proactively replace a transformer before it faults
- Open Neutral - Detect an open or loose neutral conductor prior to customer complaint or damage
- Proactive alarming and reporting
  - Transformer Incipient Failure Notification
  - Secondary Neutral Failure Notification





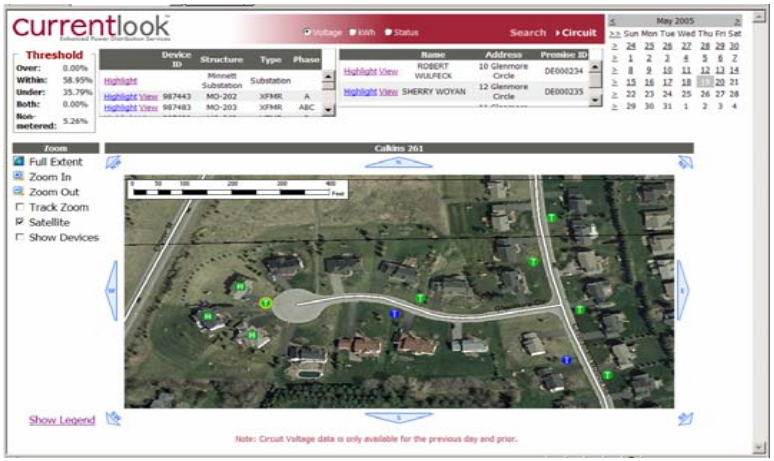
Smart Grid Services
Supporting Software Solutions

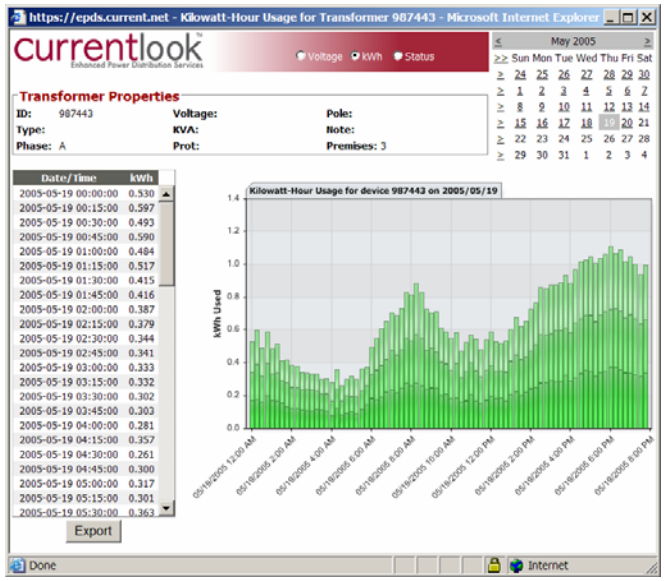
CURRENT Collector

- Enables the collection and predictive monitoring of BPL-enabled devices
- Direct and secure communications with BPL-enabled meters
- Real-time alarming of outage, restoration, voltage
- Robust application programming interface (API) set to allow for integration into utility systems

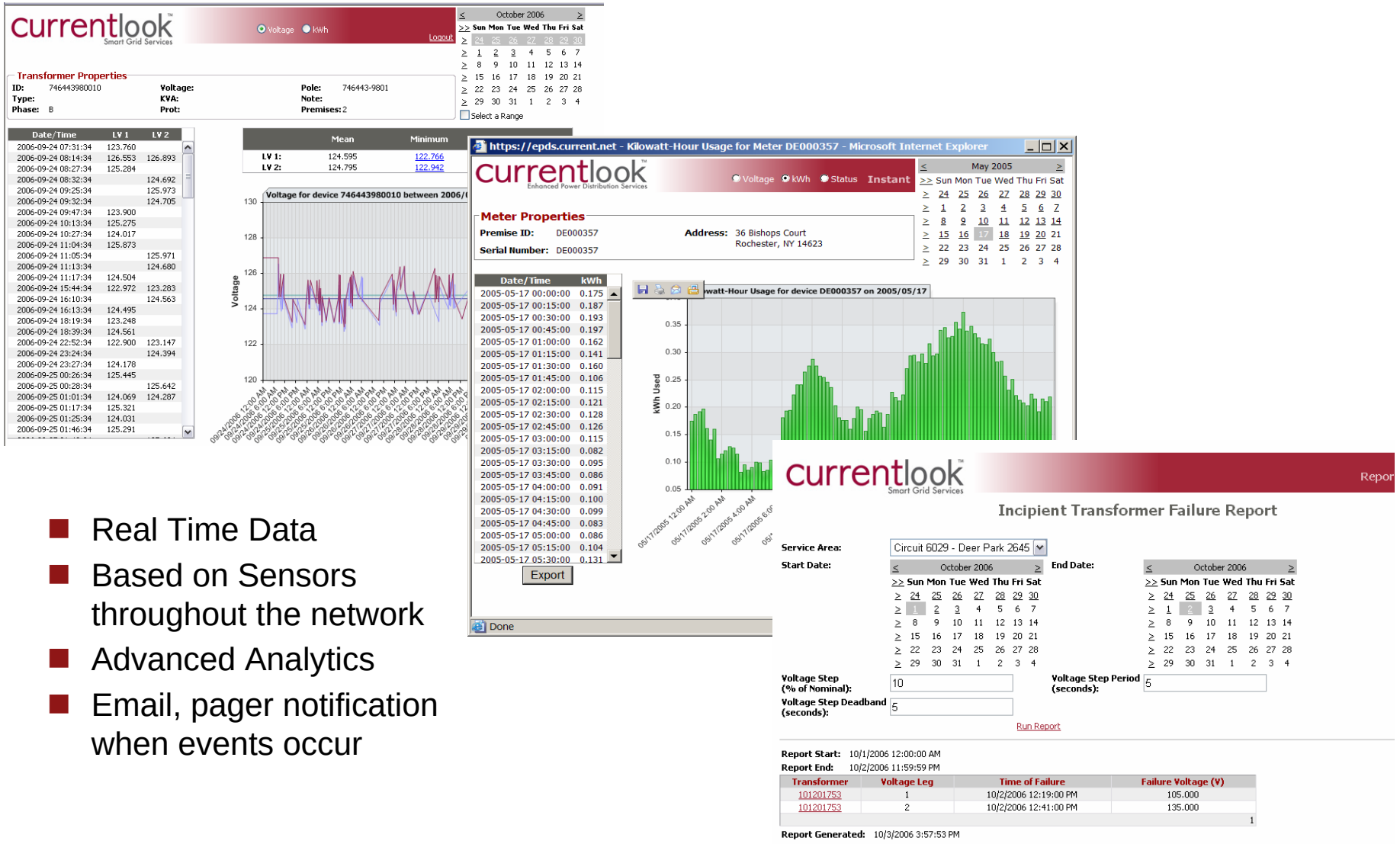
CURRENT LOOK®

- Displays Smart Grid services information with graphical user interface presented hierarchically from the grid to meters
- Examples of information include: kWh, voltage monitoring and outage management data





Smart Grid Analytics



- Real Time Data
- Based on Sensors throughout the network
- Advanced Analytics
- Email, pager notification when events occur

Uses of Smart Grid to Reduce Operational Losses

- **Direct Load Control**
  - Two way high speed communication with Direct Load Control devices
  - Reduces load in less than 4 seconds as alternative to Spinning Reserves
- **Switched Capacitor Banks**
  - Two way, high speed communications and sensing
  - Allows utilities to adaptively match the amount of capacitor KVAR to the real-time reactive loading of the feeder
  - Reduces KVA load of the feeder, which in turn reduces technical losses
- **Phase Load Balancing**
  - Smart Grid current monitoring identifies feeders or portions of feeders with poor phase load balance
  - Actionable intelligence algorithms recommends switching steps to achieve phase balance during all loading conditions
  - Result is balanced loading between the phases and a reduction in technical losses
- **Voltage Regulation**
  - Voltage sensing and high speed communications with capacitor bank controllers enhance automatic voltage regulation systems to keep voltage at the high end of the tariff range
  - Result is reduction in current and therefore technical losses
- **Adaptive Load Balancing**
  - Voltage Sensing and Current Monitoring combined with high speed communications and automated switching devices enable a concurrent constraint load balancing algorithm
  - Algorithm evaluates system operating and load flow constraints to automatically balance loading between feeders/substations reducing technical losses

Communications Services
Competitive Differentiation

Overall customer satisfaction in Cincinnati of 95% with over 50% of new customers switching from cable or DSL

Alternative to Cable and DSL for Third Parties

- Opportunity to leverage brand and customer relationships of the electric utility
- Opportunity to leverage brand and customer relationships of other retail marketers:
  - EarthLink wholesale agreement already in place

High Performance and Reliability

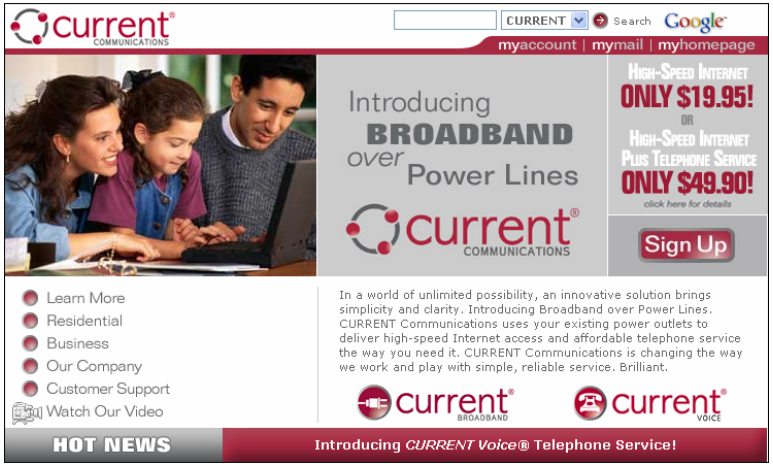
- Up to 10+ Mbps symmetrical service
- Economically optimized for high performance and capacity during peak periods

Ease of Use

- True Plug and Play
- No service call, installation CD or routers

Faster Uploads

- Up to 10x typical DSL / cable speed
- Critical for sending significant volumes of digital content to the Internet, including pictures, videos or music



CURRENT.NET Customer Portal

Powerline Modems:
Available with Ethernet, USB, or Wireless Interfaces